

**IN THE SPECIFICATION:**

Amend the specification as follows:

Replace the paragraph at Page 1, lines 2-8, with the following:

The present invention generally relates to a method and an apparatus for generating X-ray or extreme ultraviolet (EUV) radiation, especially with high brilliance. The generated radiation can for example be used in medical ~~diagnosis~~ diagnostics, non-destructive testing, lithography, microscopy, materials science, or in some other X-ray or EUV application.

Replace the paragraph at Page 1, lines 11-15, with the following

X-ray sources of high power and brilliance are applied in many fields, for instance medical ~~diagnosis~~ diagnostics, non-destructive testing, crystal structural analysis, surface physics, lithography, X-ray fluorescence, and microscopy.

Replace the paragraph at Page 1, line 16, to Page 2, line 21, with the following:

In some applications, X-rays are used for imaging the interior of objects that are opaque to visible light, for example in medical diagnostics and material inspection, where 10-1000 keV X-ray radiation is utilized, i.e. hard X-ray radiation. Conventional hard X-ray sources, in which an electron beam is accelerated towards a solid anode, generate X-ray radiation of relatively low brilliance. In hard X-ray imaging, the resolution of the obtained image basically depends on the distance to the X-ray source and the size of the source. The

exposure time depends on the distance to the source and the power of the source. In practice, this makes X-ray imaging a trade-off between resolution and exposure time. The challenge has always been to extract as much X-ray power as possible from as small a source as possible, i.e. to achieve high brilliance. In conventional solid-target sources, X-rays are emitted both as continuous Bremsstrahlung and characteristic line emission, wherein the specific emission characteristics depend on the target material used. The energy that is not converted into X-ray radiation is primarily deposited as heat in the solid target. The primary factor limiting the power, and the brilliance, of the X-ray radiation emitted from a conventional X-ray tube is the heating of the anode. More specifically, the electron-beam power must be limited to the extent that the anode material does not melt. Several different schemes have been introduced to increase the power limit. One such scheme includes cooling and rotating the anode, see for example Chapters 3 and 7 in "Imaging Systems for Medical Diagnostics", E. Krestel, Siemens Aktiengesellschaft, Berlin and Munich, 1990. Although the cooled rotating anode can sustain a higher electron-beam power, its brilliance is still limited by the localized heating of the electron-beam focal spot. Also the average power load is limited since the same target material is used on every revolution. Typically, very high intensity sources for medical ~~diagnosis~~ diagnostics operate at 100 kW/mm.<sup>2</sup>, and state of the art low-power micro-focus devices operate at 150 kW/mm.<sup>2</sup>.

Replace the paragraph at Page 4, lines 32-34, with the following:

A further objective is to provide a method and an apparatus generating radiation suitable for medical ~~diagnosis~~ diagnostics and material inspection.

Replace the paragraph at Page 12, lines 5-34, with the following:

In the first mode of operation, which is primarily intended for generation of hard X-ray radiation to be used in, inter alia, medical ~~diagnosis~~ diagnostics, the electron source 2 is controlled in such a manner, in relation to the characteristics of the target 5, that essentially no plasma is formed at the area of interaction 9. Thereby, hard X-ray radiation is obtained via Bremsstrahlung and characteristic line emission. It is preferred that the distance from the outlet opening 8 to the area of interaction 9 is sufficiently long, typically 0.5-10 mm, so that the beam-jet-interaction does not damage the outlet. In one conceivable realization, use is made of a jet 5 of liquid metal having a diameter of about 30  $\mu\text{m}$  and a propagation speed of about 600 m/s, the jet 5 being irradiated about 10 mm away from the outlet opening 8 by means of an electron beam 4 of about 100 mA and 100 keV, the beam 4 being focused on the jet 5 to obtain a power density of about 10 MW/mm<sup>2</sup> in the area of interaction 9. This power density is roughly a factor of 100 better than in conventional solid-target systems, as discussed by way of introduction. By means of the invention, a high-resolution image can be obtained with a low exposure time. In this first mode of operation, the jet 5 is preferably formed from metals heated to a liquid state. In this context, tin (Sn) should be easy to use, although other metals or alloys may be used for generation of radiation in a desired wavelength range. Further, it is also conceivable to use

completely different substances for generating the jet 5, such as gases cooled to a liquid state or material dissolved in a carrier liquid.

Replace the paragraph at Page 15, lines 4-10, with the following:

It should be realized that the inventive method and apparatus can be used to provide radiation for medical ~~diagnosis~~ diagnostics, non-destructive testing, lithography, crystal analysis, microscopy, materials science, microscopy-surface physics, protein structure determination by X-ray diffraction, X-ray photo spectroscopy (XPS), X-ray fluorescence, or in some other X-ray or EUV application.